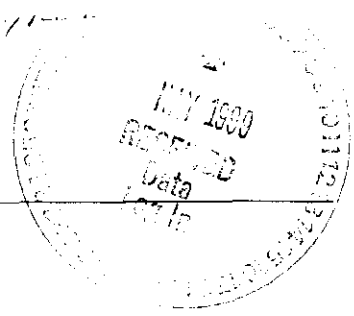
RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

0051472



Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-001
RFW# : 9903L584
SDG/SAF #: H0369/ B99-001

W.O. #: 10985-001-001-9999-00
Date Received: 03-30-99

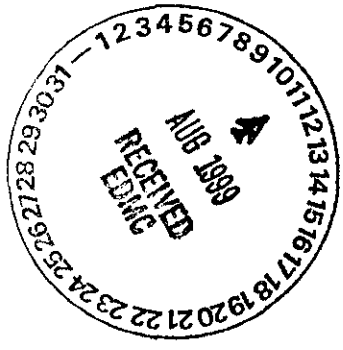
GC/MS VOLATILE

One (1) soil sample was collected on 03-25-99.

The sample and its associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 04-02-99.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. Non-target compounds were not detected in the sample.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL.



J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

04-23-99
Date

som\group\data\ voa\tnu03584.doc

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610)-280-3000 • Fax (610) 280-3041

GLOSSARY OF VOA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY OF VOA DATA

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List — Report Date: 04/05/99 16:10

RFW Batch Number: **9903L584** Client: **TNU-HANFORD B99-001** Work Order: 10985001001 Page: 1a

	Cust ID:	B0V113	B0V113	B0V113	VBLKYG	VBLKYG BS
Sample Information	RFW#:	001	001 MS	001 MSD	99LVH048-MB1	99LVH048-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	0.962	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Toluene-d8	100 %	102 %	100 %	101 %	98 %
	Bromofluorobenzene	91 %	92 %	88 %	93 %	90 %
	1,2-Dichloroethane-d4	95 %	102 %	94 %	92 %	96 %
Chloromethane		11 U	11 U	11 U	10 U	10 U
Bromomethane		11 U	11 U	11 U	10 U	10 U
Vinyl Chloride		11 U	11 U	11 U	10 U	10 U
Chloroethane		11 U	11 U	11 U	10 U	10 U
Methylene Chloride		5 JB	6 B	6 B	10	10 B
Acetone		21 B	18 B	20 B	9 J	11 B
Carbon Disulfide		6 U	6 U	6 U	5 U	5 U
1,1-Dichloroethene		6 U	110 %	99 %	5 U	97 %
1,1-Dichloroethane		6 U	6 U	6 U	5 U	5 U
1,2-Dichloroethene (total)		6 U	6 U	6 U	5 U	5 U
Chloroform		6 U	6 U	6 U	5 U	5 U
1,2-Dichloroethane		6 U	6 U	6 U	5 U	5 U
2-Butanone		11 U	11 U	11 U	10 U	10 U
1,1,1-Trichloroethane		6 U	6 U	6 U	5 U	5 U
Carbon Tetrachloride		6 U	6 U	6 U	5 U	5 U
Bromodichloromethane		6 U	6 U	6 U	5 U	5 U
1,2-Dichloropropane		6 U	6 U	6 U	5 U	5 U
cis-1,3-Dichloropropene		6 U	6 U	6 U	5 U	5 U
Trichloroethene		6 U	107 %	106 %	5 U	103 %
Dibromochloromethane		6 U	6 U	6 U	5 U	5 U
1,1,2-Trichloroethane		6 U	6 U	6 U	5 U	5 U
Benzene		6 U	115 %	112 %	5 U	110 %
Trans-1,3-Dichloropropene		6 U	6 U	6 U	5 U	5 U
Bromoform		6 U	6 U	6 U	5 U	5 U
4-Methyl-2 pentanone		11 U	11 U	11 U	10 U	10 U
2 Hexanone		11 U	11 U	11 U	10 U	10 U
Tetrachloroethene		6 U	6 U	6 U	5 U	5 U
1,1,2,2-Tetrachloroethane		6 U	6 U	6 U	5 U	5 U
Toluene		6 U	119 %	117 %	5 U	113 %

*= Outside of EPA CLP QC limits.

	Cust ID:	B0V113	B0V113	B0V113	VBLKYG	VBLKYG BS
	RFW#:	001	001 MS	001 MSD	99LVH048-MB1	99LVH048-MB1
Chlorobenzene		6 U	115 %	113 %	5 U	113 %
Ethylbenzene		6 U	6 U	6 U	5 U	5 U
Styrene		6 U	6 U	6 U	5 U	5 U
Xylene (total)		6 U	6 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-001

DATE RECEIVED: 03/30/99 RFW LOT # :9903L584

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V113	001	S	99LVH048	03/25/99	N/A	04/02/99
B0V113	001 MS	S	99LVH048	03/25/99	N/A	04/02/99
B0V113	001 MSD	S	99LVH048	03/25/99	N/A	04/02/99
LAB QC:						
VBLKYG	MB1	S	99LVH048	N/A	N/A	04/02/99
VBLKYG	MB1 BS	S	99LVH048	N/A	N/A	04/02/99

RECRA LabNet Use Only

99036584

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU-Hanford B99-001

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC spec Del std TAT 7 day

Date Rec'd 3/30/99 Date Due 4/6/99

Account #

	VOA	BNA	Pest/PCB	Herb				Metal	CN						
Refrigerator #	1	3						3							
#/Type Container Liquid															
#/Type Container Solid	1g	1g						1g							
Volume Liquid										w/metals					
Volume Solid	125	125						125							
Preservatives															

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN

RECRA LabNet Use Only: 0024H (VOA), 0025H (BNA), ① (Metal), ICRG

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb				Metal	CN	ICRG
001	BØV113	✓	✓	S	3/25/99	1305	✓	✓						✓		✓

Special Instructions:

Saf # B99-001

COMPOSITE WASTE

DATE/REVISIONS:
1. ① F Cr, Pb, Hg
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[signature]	[signature]	3/30/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: *4235795214088

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # *
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 5.4 C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-133	Page 1 of 1

Collector: Fahlberg/Kerkow/Nielson	Company Contact: R Coffman — Telephone No.: 373-6425	Project Coordinator: TRENT, SJ	Price Code / Data Turnaround
Project Designation: 100 BC Areas - Quick Turn	Sampling Location: 100 B/C	SAF No.: B99-001	
Ice Chest No.: Shipping Van 96-004	Field Logbook No.: EL 1327-02	Method of Shipment: 5.4	
Shipped To: TMA/RECRA	Offsite Property No.: A0010093	Bill of Lading/Air Bill No.: 423579524088	
		COA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	20mL	60mL	60mL	60mL	500mL						
SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions						

Sample No.	Matrix *	Sample Date	Sample Time									
B0V113	Soil	3-25-99	1305	~~X~~	X	X	X	~~X~~				B0V000
~~B0V114~~	~~Soil~~	RJN		RJN 3/29/99				RJN 3/29/99				(RCF 5623)
~~B0V115~~	~~Soil~~	3/25/99										

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Renee Nielson/R Nielson 3/29/99	0415	Fed Ex	
Fed Ex		Fowler 3/30/99	0430

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Cesium-134, Uranium-238); Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Stored in Refrigerator 1C

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

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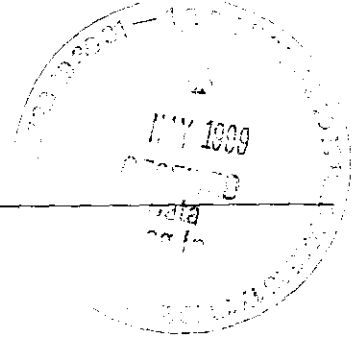
Virtual Laboratories Everywhere



Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-001
RFW #: 9903L584
SDG/SAF #: H0369/B99-001

W.O. #: 10985-001-001-9999-00
Date Received: 03-30-99

SEMIVOLATILE

One (1) soil sample was collected on 03-25-99.

The sample and its associated QC samples were extracted on 04-05-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 04-06-99.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.

2. All required holding times for extraction and analysis were met.

3. A non-target compound was detected in the sample.

4. All surrogate recoveries were within EPA QC limits.

5. Matrix spike analyses were not performed due to insufficient sample volume.

6. All blank spike recoveries were within EPA QC limits.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

04-26-99
Date

som\gorup\data\bna\tnu03584.doc

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610)-280-3000 • Fax (610) 280-3041

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY OF BNA DATA

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.

	Cust ID:	B0V113		SBLKTO		SBLKTO BS	
Sample Information	RFW#:	001		99LE0402-MB1		99LE0402-MB1	
	Matrix:	SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	74	%	79	%	83	%
	2-Fluorobiphenyl	66	%	69	%	67	%
	Terphenyl-d14	74	%	84	%	73	%
	Phenol-d5	71	%	72	%	68	%
	2-Fluorophenol	56	%	58	%	60	%
	2,4,6-Tribromophenol	71	%	74	%	80	%
Phenol		370	U	330	U	63	%
bis(2-Chloroethyl)ether		370	U	330	U	330	U
2-Chlorophenol		370	U	330	U	63	%
1,3-Dichlorobenzene		370	U	330	U	330	U
1,4-Dichlorobenzene		370	U	330	U	65	%
1,2-Dichlorobenzene		370	U	330	U	330	U
2-Methylphenol		370	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		370	U	330	U	330	U
4-Methylphenol		370	U	330	U	330	U
N-Nitroso-di-n-propylamine		370	U	330	U	85	%
Hexachloroethane		370	U	330	U	330	U
Nitrobenzene		370	U	330	U	330	U
Isophorone		370	U	330	U	330	U
2-Nitrophenol		370	U	330	U	330	U
2,4-Dimethylphenol		370	U	330	U	330	U
bis(2-Chloroethoxy)methane		370	U	330	U	330	U
2,4-Dichlorophenol		370	U	330	U	330	U
1,2,4-Trichlorobenzene		370	U	330	U	68	%
Naphthalene		370	U	330	U	330	U
4-Chloroaniline		370	U	330	U	330	U
Hexachlorobutadiene		370	U	330	U	330	U
4-Chloro-3-methylphenol		370	U	330	U	74	%
2-Methylnaphthalene		370	U	330	U	330	U
Hexachlorocyclopentadiene		370	U	330	U	330	U
2,4,6-Trichlorophenol		370	U	330	U	330	U
2,4,5-Trichlorophenol		940	U	840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0V113		SBLKTO		SBLKTO BS	
RFW#:	001		99LE0402-MB1		99LE0402-MB1	
2-Chloronaphthalene	370	U	330	U	330	U
2-Nitroaniline	940	U	840	U	840	U
Dimethylphthalate	370	U	330	U	330	U
Acenaphthylene	370	U	330	U	330	U
2,6-Dinitrotoluene	370	U	330	U	330	U
3-Nitroaniline	940	U	840	U	840	U
Acenaphthene	370	U	330	U	65	%
2,4-Dinitrophenol	940	U	840	U	840	U
4-Nitrophenol	940	U	840	U	73	%
Dibenzofuran	370	U	330	U	330	U
2,4-Dinitrotoluene	370	U	330	U	72	%
Diethylphthalate	370	U	330	U	330	U
4-Chlorophenyl-phenylether	370	U	330	U	330	U
Fluorene	370	U	330	U	330	U
4-Nitroaniline	940	U	840	U	840	U
4,6-Dinitro-2-methylphenol	940	U	840	U	840	U
N-Nitrosodiphenylamine (1)	370	U	330	U	330	U
4-Bromophenyl-phenylether	370	U	330	U	330	U
Hexachlorobenzene	370	U	330	U	330	U
Pentachlorophenol	940	U	840	U	73	%
Phenanthrene	370	U	330	U	330	U
Anthracene	370	U	330	U	330	U
Carbazole	370	U	330	U	330	U
Di-n-butylphthalate	370	U	330	U	330	U
Fluoranthene	370	U	330	U	330	U
Pyrene	370	U	330	U	69	%
Butylbenzylphthalate	370	U	330	U	330	U
3,3'-Dichlorobenzidine	370	U	330	U	330	U
Benzo(a)anthracene	370	U	330	U	330	U
Chrysene	370	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	370	U	330	U	330	U
Di-n-octyl phthalate	370	U	330	U	330	U
Benzo(b)fluoranthene	370	U	330	U	330	U
Benzo(k)fluoranthene	370	U	330	U	330	U
Benzo(a)pyrene	370	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	370	U	330	U	330	U
Dibenz(a,h)anthracene	370	U	330	U	330	U
Benzo(g,h,i)perylene	370	U	330	U	330	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0V113

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-001

Matrix: (soil/water) SOIL Lab Sample ID: 9903L584-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A040610

Level: (low/med) LOW Date Received: 03/30/99

% Moisture: 11 decanted: (Y/N) Date Extracted: 04/05/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/06/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	24.36	100	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKTO

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-001

Matrix: (soil/water) SOIL Lab Sample ID: 99LE0402-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A040609

Level: (low/med) LOW Date Received: 04/05/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 04/05/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/06/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	24.36	100	J

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-001

DATE RECEIVED: 03/30/99 RFW LOT # :9903L584

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V113	001	S	99LE0402	03/25/99	04/05/99	04/06/99
LAB QC:						
SBLKTO	MB1	S	99LE0402	N/A	04/05/99	04/06/99
SBLKTO	MB1 BS	S	99LE0402	N/A	04/05/99	04/06/99

RECRA LabNet Use Only

9903L584

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-001

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-02

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 7 day

Date Rec'd: 3/30/99 Date Due: 4/6/99

Account #:

Refrigerator #		1	3						3										
#/Type Container	Liquid																		
	Solid	1g	1g						1g										
Volume	Liquid																		
	Solid	125	125						125										
Preservatives																			
ANALYSES REQUESTED →		ORGANIC							INORG										
		VOA	BNA	Pest/PCB	Herb				Metal	CN									
									RECRA LabNet Use Only										
		0024H	0025H						(1)		1CRG								

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; WI - Wipe; X - Other; F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected
001	B0V113	✓	✓	S	3/25/99	1305

Special Instructions:

Ref # B99-C01

COMPOSITE WASTE

DATE/REVISIONS:

1. (1) F Cr, Pb, Hg
2.
3.
4.
5.
6.

ORIGINAL REWRITTEN

Relinquished by	Received by	Date	Time
Deleap	Fowler	3/30/99	0930

Relinquished by	Received by	Date	Time

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # ✱

2) Ambient or (Chilled)

3) Received in Good Condition (Y) or N

4) Labels Indicate Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES: ✱423579524088

COC Tape was: 1) Present on Outer Package (Y) or N; 2) Unbroken on Outer Package (Y) or N; 3) Present on Sample (Y) or N; 4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp 5.4 C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-133	Page 1 of 1

Collector: Fahlberg/Kerkow/Nielson	Company Contact: R Coffman	Telephone No.: 373-6425	Project Coordinator: TRENT, SJ	Price Code	Data Turnaround
Project Designation: 100 BC Areas - Quick Turn	Sampling Location: 100 B/C		SAF No.: B99-001		
Ice Chest No.: Shipping Van 96-004	Field Logbook No.: EL 1327-02		Method of Shipment: 5.4		
Shipped To: TMA/RECRA	Offsite Property No.: A0410093		Bill of Lading/Air Bill No.: 423579524088		
			COA		

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	Cool 4C	Cool 4C	None					
	Type of Container	P	aG	aG	aG	aG					
	No. of Container(s)	1	1	1	1	1					
Special Handling and/or Storage	Volume	20mL	60mL	60mL	60mL	500mL					
SAMPLE ANALYSIS		Activity Scan	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions					

Sample No.	Matrix *	Sample Date	Sample Time								
B0V113	Soil	3-25-99	1305	X	X	X	X	X			B0V000 (RCF 5623)
~~B0V114~~	~~Soil~~	RJN		RJN 3/29/99				RJN 3/29/99			
~~B0V115~~	~~Soil~~	3/25/99									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R Nielson/R Nielson 3/26/99 0445	Date/Time	Received By: Fed Ex	Date/Time
Relinquished By: Fed Ex	Date/Time	Received By: Fedex 3/26/99 0930	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Cesium-134, Uranium-238}; Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Stored in Refrigerator 1C

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

RECRA
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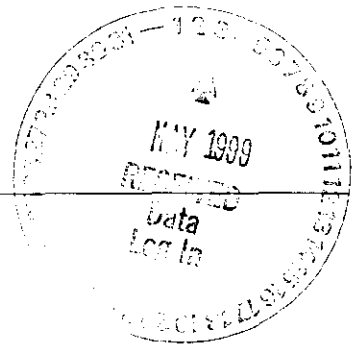
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere



Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-001
RFW# : 9903L584
SDG/SAF# : H0369/B99-001

W.O.# : 10985-001-001-9999-00
Date Received: 03-30-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 1 soil sample.

2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL) or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

for Pat E.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

1-11-99
Date

mld/m03-584

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9903L584

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050A __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B	__200.7			__99
Antimony	__6010B __7041 [5]	__200.7 __204.2			__99
Arsenic	__6010B __7060A [5]	__200.7 __206.2	__3113B		__99
Barium	__6010B	__200.7			__99
Beryllium	__6010B	__200.7			__99
Bismuth	__6010B [1]	__200.7 [1]		__1620	__99
Boron	__6010B	__200.7			__99
Cadmium	__6010B __7131A [5]	__200.7 __213.2			__99
Calcium	__6010B	__200.7			__99
Chromium	✓6010B __7191 [5]	__200.7 __218.2			__SS17
Cobalt	__6010B	__200.7			__99
Copper	__6010B __7211 [5]	__200.7 __220.2			__99
Iron	__6010B	__200.7			__99
Lead	✓6010B __7421 [5]	__200.7 __239.2	__3113B		__99
Lithium	__6010B __7430 [4]	__200.7		__1620	__99
Magnesium	__6010B	__200.7			__99
Manganese	__6010B	__200.7			__99
Mercury	__7470A [3] ✓7471A [3]	__245.1 [2] __245.5 [2]			__99
Molybdenum	__6010B	__200.7			__99
Nickel	__6010B	__200.7			__99
Potassium	__6010B __7610 [4]	__200.7 __258.1 [4]			__99
Rare Earths	__6010B [1]	__200.7 [1]		__1620	__99
Selenium	__6010B __7740 [5]	__200.7 __270.2	__3113B		__99
Silicon	__6010B [1]	__200.7		__1620	__99
Silica	__6010B	__200.7		__1620	__99
Silver	__6010B __7761 [5]	__200.7 __272.2			__99
Sodium	__6010B __7770 [4]	__200.7 __273.1 [4]			__99
Strontium	__6010B	__200.7			__99
Thallium	__6010B __7841 [5]	__200.7 __279.2 __200.9			__99
Tin	__6010B	__200.7			__99
Titanium	__6010B	__200.7			__99
Uranium	__6010B [1]	__200.7 [1]		__1620	__99
Vanadium	__6010B	__200.7			__99
Zinc	__6010B	__200.7			__99
Zirconium	__6010B [1]	__200.7 [1]		__1620	__99

Other:_____ **Method:**_____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 04/05/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L584

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0V113	Chromium, Total	4.0	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.5	MG/KG	0.19	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/05/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L584

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0197-MB1	Chromium, Total	0.11	MG/KG	0.06	1.0
		Lead, Total	0.28	MG/KG	0.18	1.0
BLANK1	99C0095-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 04/05/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L584

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0V113	Chromium, Total	25.6	4.0	21.6	100	1.0
		Mercury, Total	0.20	0.02u	0.19	105.3	1.0
		Lead, Total	51.2	2.5	54.0	90.2	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 04/05/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L584

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0V113	Chromium, Total	4.0	5.1	24.2	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Lead, Total	2.5	2.9	14.8	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/05/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L584

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0197-LC1	Chromium, LCS	51.2	50.0	MG/KG	102.4
		Lead, LCS	248	250	MG/KG	99.2
LCS1	99C0095-LC1	Mercury, LCS	1.3	1.2	MG/KG	116.3

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-001

DATE RECEIVED: 03/30/99 RFW LOT # :9903L584

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V113						
CHROMIUM, TOTAL	001	S	99L0197	03/25/99	04/01/99	04/02/99
CHROMIUM, TOTAL	001 REP	S	99L0197	03/25/99	04/01/99	04/02/99
CHROMIUM, TOTAL	001 MS	S	99L0197	03/25/99	04/01/99	04/02/99
MERCURY, TOTAL	001	S	99C0095	03/25/99	03/31/99	03/31/99
MERCURY, TOTAL	001 REP	S	99C0095	03/25/99	03/31/99	03/31/99
MERCURY, TOTAL	001 MS	S	99C0095	03/25/99	03/31/99	03/31/99
LEAD, TOTAL	001	S	99L0197	03/25/99	04/01/99	04/02/99
LEAD, TOTAL	001 REP	S	99L0197	03/25/99	04/01/99	04/02/99
LEAD, TOTAL	001 MS	S	99L0197	03/25/99	04/01/99	04/02/99
LAB QC:						
CHROMIUM LABORATORY	LC1 BS	S	99L0197	N/A	04/01/99	04/02/99
CHROMIUM, TOTAL	MB1	S	99L0197	N/A	04/01/99	04/02/99
MERCURY LABORATORY	LC1 BS	S	99C0095	N/A	03/31/99	03/31/99
MERCURY, TOTAL	MB1	S	99C0095	N/A	03/31/99	03/31/99
LEAD LABORATORY	LC1 BS	S	99L0197	N/A	04/01/99	04/02/99
LEAD, TOTAL	MB1	S	99L0197	N/A	04/01/99	04/02/99

RECRA LabNet Use Only

9903L584

Custody Transfer Record/Lab Work Request Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECR LabN

Client TNU-Hanford B99-001

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager CJ

QC spec Del stcl TAT 7 day

Date Rec'd 3/30/99 Date Due 4/6/99

Account #

Refrigerator #		1	3							3									
#/Type Container	Liquid																		
	Solid	1g	1g							1g									
Volume	Liquid																		
	Solid	125	125							125									
Preservatives																			
ANALYSES REQUESTED →		ORGANIC								INORG									
		VOA	BNA	Pest/PCB	Herb					Metal	CN								

Metals

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	RECRA LabNet Use Only											
								0024H	0025H							①		ICP6	
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish	001	B0V113	✓	✓	S	3/25/99	1305	✓	✓							✓		✓	

Special Instructions:

Ref # B99-001

COMPOSITE WASTE

DATE/REVISIONS:

① = Cr, Pb, Hg

2

3

4

5

6

Relinquished by	Received by	Date	Time
Deeley	Zoller	3/30/99	1430

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered

Airbill # *

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: *423579524088

COC Tape was: 1) Present on Outer Package Y or N; 2) Unbroken on Outer Package Y or N; 3) Present on Sample Y or; 4) Unbroken on Sample Y or N; COC Record Present Upon Sample Receipt Y or

Cooler Temp 5.4

011

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-133	Page 1 of 1

Collector: Fahlberg-Nielson / Nielson	Company Contact: R Coffman	Telephone No.: 373-6425	Project Coordinator: TRENT, SJ	Price Code	Data Turnaround
Project Designation: 100 BC Areas - Quick Turn	Sampling Location: 100 B/C		SAF No.: B99-001		
Ice Chest No.: Shipping Van 96-004	Field Logbook No.: EL 1327-02		Method of Shipment: 5.4		
Shipped To: EMA/RECRA	Offsite Property No.: AC410093		Bill of Lading/Air Bill No.: 423579524088		
			COA		

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	Cool 4C	Cool 4C	None				
	Type of Container	P	aG	aG	aG	aG				
Special Handling and/or Storage	No. of Container(s) / Volume	1 / 20mL	1 / 60mL	1 / 60mL	1 / 60mL	1 / 500mL				
SAMPLE ANALYSIS		Activity Scan	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions				

Sample No.	Matrix *	Sample Date	Sample Time								
B0V113	Soil	3-25-99	1305	~~X~~	X	X	X	~~X~~				B0V000 (RCF 5623)
~~B0V114~~	~~Soil~~	RJN		RJN 3/29/99				RJN 3/29/99				
~~B0V115~~	~~Soil~~	3/25/99										

CHAIN OF POSSESSION	Sign/Print Names			
Relinquished By: R Nielson / R Nielson 3/26/99 1445	Date/Time	Received By: Fed Ex	Date/Time	
Relinquished By: Fed Ex	Date/Time	Received By: Fedex 3/30/99 0730	Date/Time	
Relinquished By	Date/Time	Received By	Date/Time	
Relinquished By	Date/Time	Received By	Date/Time	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Cesium-134, Uranium-238}; Americium-241; Isotopic Plutonium, Isotopic Uranium; Strontium-89,90 -- Total Sr, Nickel-63
Stored in Refrigerator 1C

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

012

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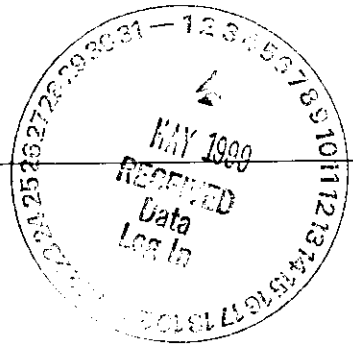


Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-001
RFW# : 9903L584
SDG# : H0369
SAF# : B99-001

W.O. # : 10985-001-001-9999-00
Date Received: 03-30-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 1 soil sample.

2. The sample was prepared and analyzed in accordance with the methods indicated on the attached glossary.

3. Sample holding times as required by the method and/or contract were met.

4. The cooler temperature was recorded on the chain-of-custody.

5. The method blank for chromium VI was within method criteria.

6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.

7. The matrix spike recoveries were within the 75-125% control limits.

8. The replicate analysis for Chromium VI was within the 20% Relative Percent Difference (RPD) control limit.

9. Results for solid samples are reported on a dry weight basis.

for Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

4-16-99
Date

njp\i03-584

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610)-280-3000 • Fax (610) 280-3041

WET CHEMISTRY
METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	ASTM	SW846	OTHER
%Ash	__ D2216-80		
%Moisture	__ D2216-80		__ ILMO4.0 (e)
%Solids			__ ILMO4.0 (e)
%Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Corrosivity __by coupon __by pH		__ 1110 (mod)__ 9045	
Cyanide, Total		__ 9010	__ ILMO4.0 (e)
Cyanide, Reactive		__ Sec 7.3	
Density			__ b
Halides, Extractable Organic			__ EPA 600/4/84-008 (mod)
Halides, Total			__ EPA 600/4/84-008 (mod)
EP-Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Carbon, Total Organic (by LOI)			__ c
Oil and Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87 (mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1 (mod)
pH, Soil		__ 9045B	
Sulfide, Reactive		__ Sec 7.3	
Specific Gravity	__ D1429-76C		
Sulfur, Total		__ 9056	
TCLP		__ 1311	
TCLV		__ 1311	
Synthetic Precipitation Leach		__ 1312	
Chlorine, Total		__ 9056	
Paint Filter		__ 9095	

Other: Chromium VI Method: SW3060A/7196A

002

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed., (1989).

b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986)

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965)

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 04/15/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L584

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0V113	% Solids	89.1	%	0.01	1.0
		Chromium VI	8.2	MG/KG	0.90	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/15/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L584

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LVI031-MB1	Chromium VI	0.80 u	MG/KG	0.80	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 04/15/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L584

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0V113	Soluble Chromium VI	56.2	8.2	44.9	106.9	1.0
		Insoluble Chromium VI	1420	8.2	1300	108.6	20.0
BLANK10	99LVI031-MB1	Soluble Chromium VI	38.4	0.80u	40.0	96.0	1.0
		Insoluble Chromium VI	1130	0.80u	1160	96.7	20.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 04/15/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L584

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0V113	Chromium VI	8.2	8.6	4.2	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-001

DATE RECEIVED: 03/30/99 RFW LOT # :9903L584

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V113						
% SOLIDS	001	S	99L%S047	03/25/99	03/31/99	04/01/99
CHROMIUM VI	001	S	99LVI031	03/25/99	04/06/99	04/06/99
CHROMIUM VI	001 REP	S	99LVI031	03/25/99	04/06/99	04/06/99
CHROMIUM VI	001 MS	S	99LVI031	03/25/99	04/06/99	04/06/99
CHROMIUM VI	001 MSD	S	99LVI031	03/25/99	04/06/99	04/06/99
LAB QC:						
CHROMIUM VI	MB1	S	99LVI031	N/A	04/06/99	04/06/99
CHROMIUM VI	MB1 BS	S	99LVI031	N/A	04/06/99	04/06/99
CHROMIUM VI	MB1 BSD	S	99LVI031	N/A	04/06/99	04/06/99

RECRA LabNet Use Only

9903L584

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNC-Hanford B99-001

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager CJ

QC spec Del std TAT 7 day

Date Rec'd 3/30/99 Date Due 4/6/99

Account #

Refrigerator #		1	3						3									
#/Type Container	Liquid																	
	Solid	1g	1g						1g									
Volume	Liquid																	
	Solid	125	125						125									
Preservatives																		
ANALYSES REQUESTED →		ORGANIC							INORG									
		VOA	BNA	Pest/PCB	Herb				Metal	CN								

ultimates

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	RECRA LabNet Use Only										
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish								0A24H	0A25H						①		ICP6	
	001	B0V113	✓	✓	S	3/25/99	1305	✓	✓						✓		✓	

Special Instructions:

Dup # B99-001

COMPOSITE WASTE

DATE/REVISIONS:

① F Cr, Pb, Hg

2.

3.

4.

5.

6.

Relinquished by	Received by	Date	Time
Dealer	Fedex	3/30/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered

Airbill # ✱

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES: ✱423579524088

COC Tape was: 1) Present on Outer Package (Y) or N; 2) Unbroken on Outer Package (Y) or N; 3) Present on Sample (Y) or N; 4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp 5.4 C

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-133	Page 1 of 1

Collector Fahlberg Kerkow /Nielson	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ	Price Code / Data Turnaround
Project Designation 100 BC Areas - Quick Turn	Sampling Location 100 B/C		SAF No. B99-001	
Ice Chest No. Shipping Van 96-004	Field Logbook No. EL 1327-02		Method of Shipment 5.4	
Shipped To TMA/RECRA	Offsite Property No. A9910093		Bill of Lading/Air Bill No. 423579524088	
			COA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	P	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1
Volume	20mL	60mL	60mL	60mL	500mL
SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	Item (1)	Semi-VOA	VOA	Item (2)	
B0V113	Soil	3-25-99	1305	~~X~~	X	X	X	~~X~~	B0V000
~~B0V114~~	~~Soil~~	RJN		RJN 3/29/99				RJN 3/29/99	(RCF 5623)
~~B0V115~~	~~Soil~~	3/25/99							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Renee Nielson / R. Nielson	Date/Time 3/29/99 0915	Received By Fed Ex	Date/Time
Relinquished By Fed Ex	Date/Time	Received By J Ferler	Date/Time 3/30/99 0930
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Cesium-134, Uranium-238}; Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Stored in Refrigerator 1C

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0369 is comprised of one solid (soil) sample designated under SAF No. B99-001 with a Project Designation of: 100 BC Areas - Quick Turn.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the TNU Sample Receipt Checklist. There was a quick turn-around time requirement for gamma spec, isotopic plutonium, and total strontium. The data for total strontium and isotopic plutonium was reported by fascimilie on April 6, 1999; gamma spec by fascimilie on April 7, 1999; isotpic plutonium and nickel-63 by fascimilie on April 14, 1999; and americium-241 by fascimilie on April 14 and 15, 1999.

2.0 ANALYSIS NOTES

2.1 Nickel-63 Analyses

No problems were encountered during the processing of the samples.

2.2 Total Strontium Analyses

The aliquot for the analysis was reduced for expeditious sample preparation. The resultant increased MDA's reflect the decreased aliquot.

2.3 Isotopic Uranium Analyses

No problems were encountered during the processing of the samples.

2.4 Isotopic Plutonium Analyses

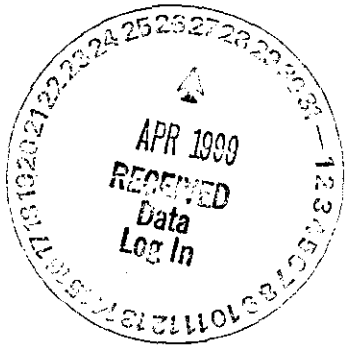
The aliquot for the analysis was reduced for expeditious sample preparation. The resultant increased MDA's reflect the decreased aliquot.

2.5 Americium-241 Analyses

The aliquot for the analysis was reduced for expeditious sample preparation. The resultant increased MDA's reflect the decreased aliquot.

2.6 Gamma Scan Analyses

No problems were encountered during the processing of the samples.



TMA/RICHMOND

SAMPLE DELIVERY GROUP H0369

SAMPLE SUMMARY

SDG 7710
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0369

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0V113	100 B/C	SOLID		N903159-01	B99-001	B99-001-133	03/25/99 13:05
Method Blank		SOLID		N903159-03	B99-001		
Method Blank		SOLID		N903159-06	B99-001		
Lab Control Sample		SOLID		N903159-02	B99-001		
Lab Control Sample		SOLID		N903159-05	B99-001		
Duplicate (N903159-01)	100 B/C	SOLID		N903159-04	B99-001		03/25/99 13:05
Duplicate (N903159-01)	100 B/C	SOLID		N903159-07	B99-001		03/25/99 13:05

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0369

QC SUMMARY

SDG 7710
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0369

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS RECEIVED	DAYS COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7710	B99-001-133	B0V113	SOLID	92.3			03/30/99	5	N903159-01	7710-001
		Method Blank	SOLID						N903159-03	7710-003
		Method Blank	SOLID						N903159-06	7710-006
		Lab Control Sample	SOLID						N903159-02	7710-002
		Lab Control Sample	SOLID						N903159-05	7710-005
		Duplicate (N903159-01)	SOLID	92.3			03/30/99	5	N903159-04	7710-004
		Duplicate (N903159-01)	SOLID				03/30/99	5	N903159-07	7710-007

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0369

PREP BATCH SUMMARY

SDG 7710
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0369

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	2851-043	5.0	1			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	2851-043	5.0	1			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	2851-043	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	2851-043	10.0	1			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	2851-043	15.0	1			1	1	1/1		
Liquid Scintillation Counting												
NI_L	SOLID	Nickel 63 in Soil	2851-043	10.0	1			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0369

WORK SUMMARY

SDG 7710
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0369

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUFFIX	ANALYZED	REVIEWED	BY	METHOD
B0V113			N903159-01	7710-001	AM		04/14/99	04/14/99	TAH	Americium 241 in Soil
100 B/C		SOLID	03/25/99	7710-001	GAM		04/06/99	04/07/99	TAH	Gamma Scan
B99-001-133	B99-001		03/30/99	7710-001	NI_L		04/09/99	04/14/99	TAH	Nickel 63 in Soil
				7710-001	PU		04/06/99	04/06/99	NJV	Plutonium, Isotopic in Solids
				7710-001	SR		04/02/99	04/06/99	NJV	Total Strontium in Soil
				7710-001	U	A1	04/14/99	04/14/99	TAH	Uranium, Isotopic in Soil
Method Blank			N903159-03	7710-003	AM		04/14/99	04/15/99	TAH	Americium 241 in Soil
		SOLID		7710-003	GAM		04/05/99	04/07/99	TAH	Gamma Scan
	B99-001			7710-003	NI_L		04/09/99	04/14/99	TAH	Nickel 63 in Soil
				7710-003	PU		04/06/99	04/06/99	NJV	Plutonium, Isotopic in Solids
				7710-003	SR		04/02/99	04/06/99	NJV	Total Strontium in Soil
Method Blank			N903159-06	7710-006	U		04/14/99	04/14/99	TAH	Uranium, Isotopic in Soil
		SOLID								
	B99-001									
Lab Control Sample			N903159-02	7710-002	AM		04/14/99	04/15/99	TAH	Americium 241 in Soil
		SOLID		7710-002	GAM		04/05/99	04/07/99	TAH	Gamma Scan
	B99-001			7710-002	NI_L		04/09/99	04/14/99	TAH	Nickel 63 in Soil
				7710-002	PU		04/06/99	04/06/99	NJV	Plutonium, Isotopic in Solids
				7710-002	SR		04/02/99	04/06/99	NJV	Total Strontium in Soil
Lab Control Sample			N903159-05	7710-005	U		04/14/99	04/14/99	TAH	Uranium, Isotopic in Soil
		SOLID								
	B99-001									
Duplicate (N903159-01)			N903159-04	7710-004	AM		04/14/99	04/15/99	TAH	Americium 241 in Soil
100 B/C		SOLID	03/25/99	7710-004	GAM		04/06/99	04/07/99	TAH	Gamma Scan
	B99-001		03/30/99	7710-004	NI_L		04/09/99	04/14/99	TAH	Nickel 63 in Soil
				7710-004	PU		04/06/99	04/06/99	NJV	Plutonium, Isotopic in Solids
				7710-004	SR		04/02/99	04/06/99	NJV	Total Strontium in Soil
Duplicate (N903159-01)			N903159-07	7710-007	U		04/14/99	04/14/99	TAH	Uranium, Isotopic in Soil
100 B/C		SOLID	03/25/99							
	B99-001		03/30/99							

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 04/15/99

SDG 7710
Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0369

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B99-001	Americium 241 in Soil	AM/CMPLATE	1			1	1	1	4
GAM	B99-001	Gamma Scan	GAMMAHI	1			1	1	1	4
NI_L	B99-001	Nickel 63 in Soil	NI63LSC	1			1	1	1	4
PU	B99-001	Plutonium, Isotopic in Solids	PUPLATE	1			1	1	1	4
SR	B99-001	Total Strontium in Soil		1			1	1	1	4
U	B99-001	Uranium, Isotopic in Soil	UPLATE	1			1	1	1	4
TOTALS				6			6	6	6	24

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 04/15/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0369

N903159-03 Method Blank

METHOD BLANK

SDG	7710	Client/Case no	Hanford SDG-H0369
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903159-03	Client sample id	Method Blank
Dept sample id	7710-003	Material/Matrix	SOLID
		SAF No	B99-001

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Plutonium 238	13981-16-3	0	0.014	0.053	0.050	U	PU
Plutonium 239/240	PU-239/240	-0.007	0.014	0.053	0.050	U	PU
Nickel 63	13981-37-8	1.07	1.1	1.8	20	U	NI_L
Americium 241	14596-10-2	0.006	0.017	0.026	0.050	U	AM
Total Strontium	SR-RAD	0.032	0.15	0.28	1.0	U	SR
Cobalt 60	10198-40-0	U		0.007	0.050	U	GAM
Cesium 134	13967-70-9	U		0.009		U	GAM
Cesium 137	10045-97-3	U		0.007	0.050	U	GAM
Europium 152	14683-23-9	U		0.019	0.10	U	GAM
Europium 154	15585-10-1	U		0.019	0.10	U	GAM
Europium 155	14391-16-3	U		0.014	0.10	U	GAM
Americium 241	14596-10-2	U		0.008		U	GAM
Uranium 238	U-238	U		0.80		U	GAM
Uranium 235	15117-96-1	U		0.025		U	GAM

100 BC Areas-Quick Turn

QC-BLANK 30430

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/15/99

N903159-06 Method Blank

METHOD BLANK

SDG 7710 Client/Case no Hanford SDG-H0369
Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N903159-06 Client sample id Method Blank
Dept sample id 7710-006 Material/Matrix SOLID
SAF No B99-001

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.013	0.026	0.10	0.30	U	U
Uranium 235	15117-96-1	0	0.032	0.12	0.30	U	U
Uranium 238	U-238	0	0.026	0.10	0.30	U	U

100 BC Areas-Quick Turn

QC-BLANK 30467

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0369

N903159-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7710
Contact L.A. Johnson

Client/Case no Hanford SDG-H0369
Case no TRB-SBB-207925

Lab sample id N903159-02
Dept sample id 7710-002

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B99-001

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Plutonium 238	6.08	0.54	0.055	0.050		PU	5.66	0.23	107	82-118	80-120
Plutonium 239/240	5.83	0.52	0.055	0.050		PU	5.95	0.24	98	84-116	80-120
Nickel 63	168	3.8	1.7	20		NI_L	168	6.7	100	83-117	
Americium 241	5.10	0.43	0.050	0.050		AM	5.27	0.21	97	85-115	80-120
Total Strontium	13.6	0.51	0.21	1.0		SR	12.6	0.50	108	82-118	
Cobalt 60	0.360	0.027	0.011	0.050		GAM	0.357	0.014	101	74-126	80-120
Cesium 137	0.390	0.025	0.017	0.050		GAM	0.383	0.015	102	74-126	80-120

100 BC Areas-Quick Turn

QC-LCS 30429

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0369

N903159-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7710
Contact L.A. Johnson

Client/Case no Hanford SDG-H0369
Case no TRB-SBB-207925

Lab sample id N903159-05
Dept sample id 7710-005

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B99-001

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Uranium 233/234	4.60	0.89	0.46	0.30		U	4.95	0.20	93	71-129	80-120
Uranium 235	3.80	0.78	0.19	0.30		U	4.04	0.16	94	70-130	80-120
Uranium 238	5.90	1.1	0.44	0.30		U	5.10	0.20	116	66-134	80-120

100 BC Areas-Quick Turn

QC-LCS 30466

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0369

N903159-04

B0V113

DUPLICATE

SDG 7710 | Client/Case no Hanford | SDG-H0369

Contact L.A. Johnson | Case no TRB-SBB-207925

DUPLICATE		ORIGINAL		
Lab sample id N903159-04	Lab sample id N903159-01	Client sample id B0V113		
Dept sample id 7710-004	Dept sample id 7710-001	Location/Matrix 100 B/C	SOLID	
	Received 03/30/99	Collected 03/25/99 13:05		
% solids 92.3	% solids 92.3	Custody/SAF No B99-001-133	B99-001	

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Plutonium 238	-0.068	0.14	0.52	0.050	U	PU	0	0.13	0.50	U	-	
Plutonium 239/240	-0.068	0.14	0.52	0.050	U	PU	0.066	0.13	0.50	U	-	
Nickel 63	2.91	1.4	2.2	20	J	NI_L	1.04	1.5	2.4	U	95	158
Americium 241	0.009	0.027	0.055	0.050	U	AM	0.006	0.024	0.046	U	-	
Total Strontium	1.37	1.9	3.4	1.0	U	SR	0.738	1.5	2.7	U	-	
Potassium 40	8.80	0.54	0.25			GAM	8.16	1.0	0.64		8	38
Cobalt 60	U		0.026	0.050	U	GAM	U		0.056	U	-	
Cesium 134	U		0.038		U	GAM	U		0.069	U	-	
Cesium 137	U		0.026	0.050	U	GAM	U		0.052	U	-	
Europium 152	U		0.064	0.10	U	GAM	U		0.14	U	-	
Europium 154	U		0.089	0.10	U	GAM	U		0.16	U	-	
Europium 155	U		0.067	0.10	U	GAM	U		0.13	U	-	
Radium 226	0.310	0.050	0.049	0.10		GAM	0.370	0.11	0.11		18	62
Radium 228	0.520	0.13	0.12	0.20		GAM	0.458	0.26	0.28		13	95
Thorium 228	0.430	0.032	0.032			GAM	0.418	0.057	0.065		3	39
Thorium 232	0.520	0.13	0.12			GAM	0.458	0.26	0.28		13	95
Americium 241	U		0.061		U	GAM	U		0.13	U	-	
Uranium 238	U		3.6		U	GAM	U		6.5	U	-	
Uranium 235	U		0.098		U	GAM	U		0.21	U	-	

100 BC Areas-Quick Turn

QC-DUP#1 30431

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0369

N903159-07

B0V113

DUPLICATE

SDG 7710		Client/Case no Hanford	SDG-H0369
Contact L.A. Johnson		Case no TRB-SBB-207925	
DUPLICATE	ORIGINAL		
Lab sample id N903159-07	Lab sample id N903159-01	Client sample id B0V113	
Dept sample id 7710-007	Dept sample id 7710-001	Location/Matrix 100 B/C	SOLID
	Received 03/30/99	Collected 03/25/99 13:05	
	% solids 92.3	Custody/SAF No B99-001-133	B99-001

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Uranium 233/234	0.600	0.26	0.19	0.30		U	0.530	0.19	0.12		12	86
Uranium 235	0.031	0.061	0.23	0.30	U	U	0	0.038	0.14	U	-	
Uranium 238	0.430	0.21	0.19	0.30		U	0.670	0.22	0.12		44	84

100 BC Areas-Quick Turn

QC-DUP#1 30468

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 04/15/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0369

N903159-01 B0V113

DATA SHEET

SDG 7710	Client/Case no Hanford	SDG-H0369	
Contact L.A. Johnson	Case no TRB-SBB-207925		
Lab sample id N903159-01	Client sample id B0V113		
Dept sample id 7710-001	Location/Matrix 100 B/C	SOLID	
Received 03/30/99	Collected 03/25/99 13:05		
% solids 92.3	Custody/SAF No B99-001-133	B99-001	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.530	0.19	0.12	0.30		U
Uranium 235	15117-96-1	0	0.038	0.14	0.30	U	U
Uranium 238	U-238	0.670	0.22	0.12	0.30		U
Plutonium 238	13981-16-3	0	0.13	0.50	0.050	U	PU
Plutonium 239/240	PU-239/240	0.066	0.13	0.50	0.050	U	PU
Nickel 63	13981-37-8	1.04	1.5	2.4	20	U	NI_L
Americium 241	14596-10-2	0.006	0.024	0.046	0.050	U	AM
Total Strontium	SR-RAD	0.738	1.5	2.7	1.0	U	SR
Potassium 40	13966-00-2	8.16	1.0	0.64			GAM
Cobalt 60	10198-40-0	U		0.056	0.050	U	GAM
Cesium 134	13967-70-9	U		0.069		U	GAM
Cesium 137	10045-97-3	U		0.052	0.050	U	GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.13	0.10	U	GAM
Radium 226	13982-63-3	0.370	0.11	0.11	0.10		GAM
Radium 228	15262-20-1	0.458	0.26	0.28	0.20		GAM
Thorium 228	14274-82-9	0.418	0.057	0.065			GAM
Thorium 232	TH-232	0.458	0.26	0.28			GAM
Americium 241	14596-10-2	U		0.13		U	GAM
Uranium 238	U-238	U		6.5		U	GAM
Uranium 235	15117-96-1	U		0.21		U	GAM

100 BC Areas-Quick Turn

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0369

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Test AM Matrix SOLID
SDG 7710
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0369

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 2851-043						
B0V113	N903159-01			7710-001	U	
BLK (QC ID=30430)	N903159-03			7710-003	U	
LCS (QC ID=30429)	N903159-02			7710-002	ok	
Duplicate (N903159-01)	N903159-04			7710-004	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050	
100 BC Areas-Quick Turn						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-043	2σ prep error 5.0 %			Reference Lab		Notebook #2851 pg. 043										
B0V113	N903159-01			0.046	0.500			68		570			20	04/13/99	04/14	SS-066
BLK (QC ID=30430)	N903159-03			0.026	1.00			62		668				04/14/99	04/14	SS-043
LCS (QC ID=30429)	N903159-02			0.050	1.00			66		672				04/14/99	04/14	SS-042
Duplicate (N903159-01) (QC ID=30431)	N903159-04			0.055	0.500			75		668			20	04/14/99	04/14	SS-045
Nominal values and limits from method				0.050	1.00			20-105		700	100		180			

PROCEDURES	REFERENCE	AM/CMPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-960	Americium-Curium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.044 ± 0.025
YIELD 68 ± 11

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0369

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Test PU Matrix SOLID
SDG 7710
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0369

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 2851-043						
B0V113	N903159-01			7710-001	U	0.066 U
BLK (QC ID=30430)	N903159-03			7710-003	U	U
LCS (QC ID=30429)	N903159-02			7710-002	ok	ok
Duplicate (N903159-01)	N903159-04			7710-004	- U	- U
Nominal values and limits from method				RDLs (pCi/g)	0.050	0.050
100 BC Areas-Quick Turn						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-043	2σ prep error 5.0 %			Reference Lab	Notebook #2851 pg. 043											
B0V113	N903159-01			0.50	0.100			68		259			12	04/05/99	04/06	SS-005
BLK (QC ID=30430)	N903159-03			0.053	1.00			66		259				04/05/99	04/06	SS-007
LCS (QC ID=30429)	N903159-02			0.055	1.00			62		259				04/05/99	04/06	SS-006
Duplicate (N903159-01) (QC ID=30431)	N903159-04			0.52	0.100			68		259			12	04/05/99	04/06	SS-008
Nominal values and limits from method				0.050	1.00			20-105		10	100		180			

PROCEDURES	REFERENCE	PUPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.28 ± 0.53
YIELD 66 ± 6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0369

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Test U Matrix SOLID
SDG 7710
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0369

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 2851-043											
B0V113	N903159-01		A1	7710-001	0.530	U	0.670	79	38	0	6
Method Blank	N903159-06			7710-006	U	U	U				
Lab Control Sample	N903159-05			7710-005	ok	ok	ok				
Duplicate (N903159-01)	N903159-07			7710-007	ok	- U	ok	140	91	7	15
Nominal values and limits from method				RDLs (pCi/g)	0.30	0.30	0.30	100		4	
100 BC Areas-Quick Turn								Averages 109		4	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-043	2σ prep error 5.0 %			Reference Lab	Notebook #2851 pg. 043											
B0V113	N903159-01		A1	0.14	0.500			75		202			20	04/13/99	04/14	SS-008
Method Blank	N903159-06			0.12	1.00			84		105				04/13/98	04/14	SS-010
Lab Control Sample	N903159-05			0.46	1.00			55		105				04/13/98	04/14	SS-009
Duplicate (N903159-01)	N903159-07			0.23	0.500			90		105			20	04/13/99	04/14	SS-011
Nominal values and limits from method				0.30	1.00			30-105		150	100		180			

PROCEDURES	REFERENCE	UPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-910	Uranium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.24 ± 0.31
YIELD 76 ± 31

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0369

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Test SR Matrix SOLID
SDG 7710
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0369

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 2851-043					
B0V113	N903159-01			7710-001	U
BLK (QC ID=30430)	N903159-03			7710-003	U
LCS (QC ID=30429)	N903159-02			7710-002	ok
Duplicate (N903159-01)	N903159-04			7710-004	- U
Nominal values and limits from method				RDLs (pCi/g)	1.0
100 BC Areas-Quick Turn					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-043	2σ prep error 10.0 %			Reference Lab		Notebook #2851 pg. 043										
B0V113	N903159-01			2.7	0.100			82		150			8	04/02/99	04/02	GRB-218
BLK (QC ID=30430)	N903159-03			0.28	1.00			78		150				04/02/99	04/02	GRB-219
LCS (QC ID=30429)	N903159-02			0.21	1.00			75		200				04/02/99	04/02	GRB-201
Duplicate (N903159-01) (QC ID=30431)	N903159-04			3.4	0.100			64		150			8	04/02/99	04/02	GRB-220
Nominal values and limits from method				1.0	1.00					100			180			

PROCEDURES RP-500 Strontium - Initial Separation, rev 0
RP-519 Strontium-89,90 Demounting and Yttrium Purification, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 1.6 ± 3.3
YIELD 75 ± 15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0369

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Test GAM Matrix SOLID
SDG 7710
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0369

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 2851-043								
B0V113	N903159-01			7710-001	U		U	
BLK (QC ID=13469)	N903159-03			7710-003	U		U	
LCS (QC ID=13468)	N903159-02			7710-002	ok		ok	
Duplicate (N903159-01)	N903159-04			7710-004	-	U	-	U
Nominal values and limits from method					RDLs (pCi/g)	0.050		0.050
100 BC Areas-Quick Turn								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-043	2σ prep error 15.0 %	Reference Lab	Notebook #2851 pg. 043													
B0V113	N903159-01			0.056	189					306			12	04/01/99	04/06	JR,03,00
BLK (QC ID=13469)	N903159-03			0.007	750					813				04/01/99	04/05	JR,07,00
LCS (QC ID=13468)	N903159-02			0.017	750					415				04/01/99	04/05	JR,01,00
Duplicate (N903159-01) (QC ID=13470)	N903159-04			0.026	189					404			12	04/01/99	04/06	JR,04,00
Nominal values and limits from method				0.050	750					100			180			

PROCEDURES	REFERENCE	GAMMAHI
	EP-060	Soil Preparation, rev 0
	EP-100	Ge(Li) Preparation for Environmental Samples, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.026 ± 0.042
YIELD _____ ± _____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0369

Test NI_L Matrix SOLID
SDG 7710
Contact L.A. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0369

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 2851-043						
B0V113	N903159-01			7710-001	U	
BLK (QC ID=30430)	N903159-03			7710-003	U	
LCS (QC ID=30429)	N903159-02			7710-002	ok	
Duplicate (N903159-01)	N903159-04			7710-004	ok	J
Nominal values and limits from method				RDLs (pCi/g)	20	
100 BC Areas-Quick Turn						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-043	2σ prep error 10.0 %			Reference Lab	Notebook #2851 pg. 043											
B0V113	N903159-01			2.4	0.500					100			15	04/08/99	04/09	LSC-005
BLK (QC ID=30430)	N903159-03			1.8	0.500					100				04/08/99	04/09	LSC-005
LCS (QC ID=30429)	N903159-02			1.7	0.500					100				04/08/99	04/09	LSC-005
Duplicate (N903159-01) (QC ID=30431)	N903159-04			2.2	0.500					100			15	04/08/99	04/09	LSC-005
Nominal values and limits from method				20	0.500					10			180			

PROCEDURES
REFERENCE NI63LSC
EP-060 Soil Preparation, rev 0
EP-431 Nickel-63 Purification, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 2.0 ± 0.66
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/15/99

SDG 7710
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBE-207925
Case no SDG-H0369

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/15/99

SDG 7710
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0369

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
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SDG 7710
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0369

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
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Report date 04/15/99

SDG 7710
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0369

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/15/99

SDG 7710
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0369

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

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GUIDE, cont.

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DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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REPORT GUIDE

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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

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MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

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METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-133	Page 1 of 1

Collector Fahlberg/Kerkow	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ	Price Code / Data Turnaround
Project Designation 100 BC Areas - Quick Turn	Sampling Location 100 B/C		SAF No. B99-001	
Ice Chest No. ERC 96-045	Field Logbook No. EL 1327-02		Method of Shipment	
Shipped To TMA/RECRA	Offsite Property No. A990094		Bill of Lading/Air Bill No. 42357952 4099	
			COA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None				
Type of Container	P	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1				
Volume	20mL	60mL	60mL	60mL	500mL				
SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions				

Sample No.	Matrix *	Sample Date	Sample Time									
B0V113	Soil	3-25-99	1305	X	~~X~~	~~X~~	~~X~~	X				B0V000
~~B0V114~~	~~Soil~~	RJN					RJN 3/29/99					(RCF 5623)
~~B0V115~~	~~Soil~~	3/25/99										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By R. Nielson / R. Nielson	Date/Time 3/29/99 0955	Received By Fed Ex	Date/Time 3-29-99
Relinquished By Fed Ex	Date/Time 3-30-99 10:20	Received By R. Closso JR Bosso	Date/Time 3-30-99 10:20
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Cesium-134, Uranium-238}; Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Stored in Refrigerator 1C

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Thermo **NU**tech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 3-30-99 10:30

CoC No. B99-026-02, B99-029-12, B99-001-133

Container I.D. No. ERC96-045 Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

INSPECTION

1.	Custody seals on shipping container intact?	Yes [✓]	No [ ]	N/A [ ]
2.	Custody seals on shipping container dated & signed?	Yes [✓]	No [ ]	N/A [ ]
3.	Custody seals on sample containers intact?	Yes [✓]	No [ ]	N/A [ ]
4.	Custody seals on sample containers dated & signed?	Yes [✓]	No [ ]	N/A [ ]
5.	Cooler Temperature: _____	Packing material is:	Wet [ ]	Dry [✓]

6. Number of samples in shipping container: 9

7. Number of containers per sample: _____ (Or see CoC ✓)

8. Paperwork agrees with samples? Yes [✓] No [ ]

9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]

10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]

11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____

14. Received by DeLorad Date: 3-30-99 Time: 10:30

LOGIN

TNU W.O. No. _____ Group No. _____ Client W.O. No. _____

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

- Hanford

OFF-SITE PROPERTY CONTROL

CONTROL NO. (To be obtained from PROPERTY MANAGEMENT) A990094

PART I - TO BE COMPLETED BY ORIGINATOR

Department ERC Engineering Support	Section Field & Analytical Support	Unit Field Sampling

The following items are to be shipped from [X] Contractor [ ] Vendor

Routing [X] Prepaid [ ] Collect

Shipped to Company / Address / City / State / Zip Code / Country	Off-site Custodian / On-site Custodian / Payroll No.
Thermo Retec 2030 Wright Ave Richmond, CA 94804-0040 (510)235-2633 Attn: Larry Johnson	

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1	32 lbs	Sample #: BOV3K2, BOV3K4, BOV3K6, BOV3K8, BOT9V3, BOT9V9 BOT9W5, BOT9W7, BOV113 Cooler #: ERC96-045 Polycooler with environmental samples packed with packing peanuts. BILL OF LADING # 4235 7952 4099	N/A

[ ] Classified [X] Unclassified [ ] Shipped Under DOE Contract [ ] Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

- [ ] Required for Project Work. List Project No. ______
- [ ] Business Trip
- [ ] Off-site Assignment
- [ ] Shipment to Subcontractor. List Subcontract No. ______
- [ ] Other (Please specify) ______

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
N/A	RJN 3/29/99	

Location of and Contact for Property (Name/Phone No./Bldg./Area)
Renee Nielson/(509)372-9604/3728 bldg/300 Area

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
3/29/99	R10KP4C570	

Originated By	Date	Authorized By	Date
[signature]	3/29/99	[signature]	3/29/99
Property Representative Signature	**Date**	**Property Management Approval**	**Date**
[signature]	3/29/99	[signature] for Judy Jensen	3/29/99

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
[signature]	3-29-99

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

54-3000-479